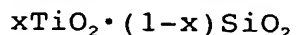


CLAIMS

1. A titanosilicate represented by the following compositional formula (1), wherein in the infrared absorption spectrum measured in the dehydrated state, the
5 absorption spectrum has an absorption band having a relative maximum value at $930 \pm 15 \text{ cm}^{-1}$:

Compositional Formula (1)



(wherein x is from 0.0001 to 0.2).

- 10 2. The titanosilicate according to claim 1, wherein in the infrared absorption spectrum measured in the dehydrated state, the greatest value in the region of $900\text{--}950 \text{ cm}^{-1}$ of the absorption spectrum is present in the region of $930 \pm 15 \text{ cm}^{-1}$.

- 15 3. The titanosilicate according to claim 2, wherein in the infrared absorption spectrum measured in the dehydrated state, the greatest value in the region of $900\text{--}950 \text{ cm}^{-1}$ of the absorption spectrum is present in the region of $930 \pm 10 \text{ cm}^{-1}$.

- 20 4. The titanosilicate according to any one of claims 1-3, wherein in the infrared absorption spectrum measured in the dehydrated state, the absorption spectrum has an absorption band having a relative maximum value at $1010 \pm 15 \text{ cm}^{-1}$ in addition to $930 \pm 15 \text{ cm}^{-1}$.

- 25 5. The titanosilicate according to any one of claims 1-4, wherein in the infrared absorption spectrum measured in the dehydrated state, the absorption spectrum has an absorption band having a relative maximum value at $865 \pm 15 \text{ cm}^{-1}$ in addition to $930 \pm 15 \text{ cm}^{-1}$.

- 30 6. The titanosilicate according to any one of claims 1-5, which is a crystalline titanosilicate having a structure code MWW characterized by the powder X-ray diffraction pattern shown in Table 7:

[Table 7]

Table 7: Powder X-Ray Diffraction Lines provided by
MWW Structure

d/Å	Relative Intensity (s: strong, m: medium, w: weak)
12.3±0.6	s
11.0±0.6	s
8.8±0.5	s
6.2±0.4	m
5.5±0.3	w
3.9±0.2	m
3.7±0.2	w
3.4±0.2	s

5 (in the above Table, "d/Å" means that the unit of the
lattice spacing d is Angstrom.)

7. The titanosilicate according to any one of
claim 1 to 7, wherein x is from 0.001 to 0.2.

8. A process for producing the titanosilicate
10 described in any one of claims 1 to 7, comprising the
following first to fourth steps:

First Step:

15 a step of heating a mixture containing a
template compound, a boron-containing compound, a
silicon-containing compound and water to obtain a
precursor (A);

Second Step:

a step of acid-treating the precursor (A)
obtained in the first step;

20 Third Step:

a step of heating the acid-treated
precursor (A) obtained in the second step together with a
mixture containing a template compound, a titanium-
containing compound and water to obtain a precursor (B);
25 and

Fourth Step:

a step of calcining the precursor (B)

obtained in the third step to obtain the titanosilicate.

9. The process for producing the titanosilicate according to claim 8, wherein the following first-2 step is performed between the first step and the second step and the substance obtained in the first-2 step is used instead of the precursor (A) in the second step:

First-2 Step:

a step of calcining a part or entirety of the precursor (A) obtained in the first step.

10. The process for producing the titanosilicate according to claim 8 or 9, wherein the following third-2 step is performed between the third step and the fourth step and the substance obtained in the third-2 step is used instead of the precursor (B) in the fourth step:

15 Third-2 Step:

a step of acid-treating a part or entirety of the precursor (B) obtained in the third step.

11. The process for producing the titanosilicate according to any one of claims 8-10, wherein the following third-3 step is performed between the third step or third-2 step, and the fourth step, and the substance obtained in the third-3 step is used instead of the precursor (B) in the fourth step:

Third-3 Step:

25 a step of heating the precursor (B) obtained in the third step, or the acid-treated precursor (B) obtained in the third-2 step, in the presence of a swelling agent so as to swell the layered precursor, to thereby modify the state of the superposition thereof.

30 12. The process for producing the titanosilicate according to any one of claims 8 to 11, wherein the template compound is a nitrogen-containing compound.

13. The process for producing the titanosilicate according to claim 12, wherein the nitrogen-containing compound is amine and/or quaternary ammonium compound.

14. The process for producing the zeolite substance according to claim 12, wherein the nitrogen-containing

compound is at least one member selected from the group consisting of piperidine, hexamethyleneimine and a mixture thereof.

5 15. The process for producing the titanosilicate according to any one of claims 8 to 14, wherein the boron-containing compound is at least one member selected from the group consisting of boric acid, borate, boron oxide, boron halide and trialkylborons.

10 16. The process for producing the titanosilicate according to any one of claims 8 to 15, wherein the silicon-containing compound is at least one member selected from the group consisting of silicic acid, silicate, silicon oxide, silicon halide, fumed silicas, tetraalkyl orthosilicates and colloidal silica.

15 17. The process for producing the titanosilicate according to any one of claims 8 to 16, wherein the ratio of boron to silicon in the mixture at the first step is, in terms of the molar ratio, boron : silicon = 0.01 to 10 : 1.

20 18. The process for producing the titanosilicate according to any one of claims 8 to 17, wherein the ratio of boron to silicon in the mixture at the first step is, in terms of the molar ratio, boron : silicon = 0.05 to 10 : 1.

25 19. The process for producing the titanosilicate according to any one of claims 8 to 18, wherein the ratio of water to silicon in the mixture at the first step is, in terms of the molar ratio: water : silicon = 5 to 200 : 1.

30 20. The process for producing the titanosilicate according to any one of claims 8 to 19, wherein the ratio of template compound to silicon in the mixture at the first step is, in terms of the molar ratio, template compound : silicon = 0.1 to 5 : 1.

35 21. The process for producing the titanosilicate according to any one of claims 8 to 19, wherein the heating temperature in the first step is from 110 to

200°C.

22. The process for producing the titanosilicate according to any one of claims 8 to 20, wherein the acid used for the acid-treatment in the second step is a
5 nitric acid or a sulfuric acid.

23. The process for producing the titanosilicate according to any one of claims 8 to 22, wherein the heating temperature in the third step is from 110 to 200°C.

10 24. The process for producing the titanosilicate according to any one of claims 8 to 23, wherein the calcination temperature in the fourth step is from 200 to 700°C.

25. The process for producing the titanosilicate according to any one of claims 9 to 24, wherein the calcination temperature in the first-2 step is from 200 to 700°C.

26. The process for producing the titanosilicate according to any one of claims 8 to 25, wherein in the
20 third step, the acid-treated precursor (A) obtained in the second step and the mixture containing a template compound, a titanium-containing compound and water are previously mixed and then heated.

27. The process for producing the titanosilicate according to any one of claims 8 to 26, wherein in the
25 third step, the acid-treated precursor (A) is treated by a dry gel method such that a mixture containing the acid-treated precursor (A) obtained in the second step, a titanium-containing compound and water and a mixture
30 containing a template compound and water are charged separately, the vapor of the containing a template compound and water is caused to contact the mixture containing the titanium-containing compound and the acid-treated precursor (A).

35 28. A process for producing an oxidized compound, comprising performing an oxidation reaction of an organic compound using the oxidizing agent in the presence of the

titanosilicate described in any one of claims 1 to 7.

29. The process for producing an oxidized compound according to claim 28, wherein the oxidizing agent is oxygen or peroxide.

5 30. The process for producing an oxidized compound according to claim 29, wherein the peroxide is at least one compound selected from the group consisting of hydrogen peroxide, tert-butyl hydroperoxide, tert-amyl hydroperoxide, cumene hydroperoxide, ethylbenzene
10 hydroperoxide, cyclohexyl hydroperoxide, methylcyclohexyl hydroperoxide, tetralin hydroperoxide, isobutylbenzene hydroperoxide, ethylnaphthalene hydroperoxide and peracetic acid.

15 31. The process for producing an oxidized compound according to any one of claims 26 to 30, wherein the oxidation reaction is performed in the presence of at least one solvent selected from the group consisting of alcohols, ketones, nitriles and water.

20 32. The process for producing an oxidized compound according to any one of claims 26 to 32 wherein the oxidation reaction of an organic compound is an oxidation reaction of a carbon-carbon double bond.

25 33. The process for producing an oxidized compound according to any one of claims 26 to 32, wherein the oxidation reaction of an organic compound is an epoxidation reaction or a diolation reaction.

30 34. The process for producing an oxidized compound according to any one of claims 26 to 31, wherein the oxidation reaction of an organic compound is an ammoximation.